

Science Focussed For the Lay Reader

THE OUTLINE OF SCIENCE. Edited by J. Arthur Thomson. Vol. 1. G. P. Putnam's Sons.

"LIFE," says Prof. Thomson, "is not for science, but science for life." This wonderful book aims not merely to demonstrate that truth but also to aid the ordinary intelligent human being in making a practical, every day application of it, in his own thinking, and, therefore, ultimately in his own conduct. If one may use the phrase without being misunderstood, there is a sense in which this book is nothing less than an offer of a new Bible for humanity. It is far more important in its focusing of the facts of science and of the inevitable inductions and arguments and conclusions from those facts to a central point of truth than it is as a mere outline of the various sciences considered. As an outline it, of course, makes no pretense of being encyclopedic; it will not take the place of more detailed study in any case. Neither is it an introductory primer, or a receptacle of elementary information. But as a comprehending essay toward the statement of science as a whole, as a master key for the unlocking of the riddle of the universe, there is already enough in this first volume to mark it as of supreme importance.

"And even more than science," Prof. Thomson continues, "to our way of thinking, is the individual development of the scientific way of looking at things. Science is our legacy; we must use it if it is to be our very own." The thing that matters for the present and future "control of life" (to borrow a phrase from an earlier book by Prof. Thomson) is precisely the universal acquirement of that "scientific way of looking at things." Naturally the attainment of that goal lies far ahead; it will need generations of education and further evolution to reach it, but such a book as this is an enormous aid, a long step forward, toward that end. "In any case," he says, "we have to try to square our views with the facts, not the facts with our views."

It is the attitude of the mind that is vital; self-reliance and an examination of facts rather than an evasion of them by resort to any kind of magic. That is the message of this book. Nearly four hundred years ago a very learned and highly intelligent thinker, Agrippa of Nettesheim, wrote a book *De Incertitudine et Vanitate Scientiarum et Artium*, which was popular in its day and was several times reprinted in an English version. It was a sarcastic attack upon the science of his day and the pretensions of the learned. Agrippa was himself a physician and a man of force and originality, yet he ended by turning back to magic as the only way out of his puzzles. It has taken mankind fully four centuries or longer, if one goes back to the beginnings of the Renaissance, to get clear of this medieval appeal to magic and to realize that science is neither uncertain nor a vain thing. Emancipation of the mind is a slow process, and there is no lack of magicians and of believers in magic to-day, but they are steadily decreasing and the guidance of hu-

man affairs is no longer wholly in their hands. It is to strengthen and broaden the power and efficiency of the partially emancipated that this book is written.

II.

It is aimed at the layman, the commonplace citizen who cannot hope ever to be an expert scientist—and who does not need to be provided he can acquire the "scientific way of looking at things." Few of us can aspire to the expert manipulation of a spectroscope, but all of us can learn the principle of it and can appreciate the story it has to tell us, and understand its irrefutable teaching. As this "Outline" is, in its own phrase, "a plain story, plainly told," an estimate of it by a layman, who can make no claim to more than rudimentary acquaintance with the details of the several sciences concerned, is, possibly, more worth while than an appraisal by technically competent experts. But the reader may be assured of its scientific accuracy and up to date-ness, and the book has been accepted by experts as authoritative. Prof. Thomson is Regius professor of natural history in the University of Aberdeen, and has long been recognized as a leader. In addition

history on broader lines, and will also discuss the new psychology, psychoanalysis and the science of the human mind.

Before examining it in more detail it is worth while to restate its purpose, again in its own words—"This work gives the intelligent student-citizen . . . a bunch of intellectual keys by which to open doors which have been hitherto shut to him, partly because he got no glimpse of the treasures behind the doors, and partly because the portals were made forbidding by an unnecessary display of technicalities." The book always avoids too technical language and it is astonishing how little of that is really necessary—and is nowhere above the comprehension of any moderately intelligent reader. Neither is it a clever selection of easily presented facts, a gathering of half truths likely to mislead. It does not blink difficulties, but is perfectly frank when they are met. Of course it calls for intellectual effort on the part of the reader. It is no "get-wise-quick" affair, no offering of a patent nostrum of enlightenment. But the facts and the doctrines evolved from them are simply stated—not predigested, but in a form readily absorbed.

with one science before going on to the next. We are concerned with detail only so far as it is necessary, and it is always the coming synthesis toward which we are moving. It is in itself a complex piece of intellectual engineering to erect such a book as this, the subject of which is no less than the universe itself, reaching out to the most distant star and down to the tiniest component of the atom—a universe, too, that is never static, but always in process of becoming, without beginning or end.

III.

And that leads to the further observation that the book is shot through with an enthusiasm, an almost emotional quality, a something that can hardly be called anything but a religion of science; but that comment must not be understood to imply any slightest divergence from dispassionate accuracy of statement. It has, however, the effect of a true inspiration. It helps one to grasp the ungraspable (for example, in the immensities of astronomy, the unthinkable bigness of its figures and the terrifying quality of its processes) better than anything else save, perhaps, some ma-



After T. H. Huxley (by permission of Messrs. Macmillan).

Skeletons of the Gibbon, Orang, Chimpanzee, Gorilla, Man.

to his vast store of scientific knowledge he is also the happy possessor of a beautifully lucid style, a clarity and directness and simplicity of diction that is, in itself, a rarity. He is a master of English as well as of biology. The expression "edited by" Prof. Thomson strikes one as a little too modest. Of course he has had a full corps of assistants and he quotes freely from standard works, but it is clear that the actual phrasing of most of the book is his own. It is a monumental achievement. It is to be complete in four volumes, this first one being naturally something of a general introduction, a statement of the main theme, though it treats in some detail of astronomy, of the doctrine of evolution, of biology, "the ascent of man" and the "dawn of mind" and concludes with the world of atoms, as the "foundation of the universe." Future volumes will doubtless amplify these matters and also cover the remaining branches of scientific exploration. The second volume, it is announced, will take up microscopy, the astonishing new discoveries as to the human body, and then natural

The arrangement of the book is at first glance a little peculiar. It even appears, almost, to be skipping about a bit after the opening chapters, but as one goes on it falls beautifully into an ordered scheme. It involves numerous starts, and a subsequent picking up of different threads to the making of a complete pattern, which, doubtless, will be even more apparent when the work is complete. And one must bear in mind that it is the body of science as a whole that he is presenting, not merely a glimpse of its component parts. For anything like a comprehensive outline of any of these parts, astronomy, physics, chemistry, geology, biology, &c., it would need a bulkier book than this. What he is doing is to pick out the essential portions of each of these component sciences, the bases upon which they rest, and their main contributions to the resultant whole. He makes no pretense of finishing

jestic poem or supernal music. Yet, of course, it is all taken very quietly, without any exuberance of adjectives or sentimentality. But the scientist is always also the poet, the seer and the prophet.

He begins, naturally, at the beginning, so far as one can predicate any beginning: in the "Romance of the Heavens," the stellar universe, vast beyond comprehension, the evolution of the stars, the nebulae and the nebular hypothesis, our own solar system, the sun itself, and our sister planets, comets and meteors, ending with a summary view of the science as but a feeble beginning of what may be learned. He avoids as much as possible controversial points, but often states the existing problem, as, for instance, in the debatable ground of the nebular hypotheses. One conclusion emerges, as beyond question, that is worth quoting, as a central

Continued on Following Page.

"The work of an artist."
—New York Evening Post.



By
MARY JOHNSTON

William Rose Benet in The New York Evening Post says:

"Mary Johnston's power of imagination and gift for fitting history to fiction were distinguished in a decade's literature. Silver Cross has odd singing rhythms and a poetic bravado of swift characterization and description that are genuinely refreshing. The breath of true romance is in this book and it should be a great while before Mary Johnston's hand fails of its cunning."

THIRD PRINTING
\$2.00 at all booksellers

LITTLE, BROWN & COMPANY
Publishers, Boston

The BEAUTIFUL and DAMNED

By F. Scott Fitzgerald
Author of "This Side of Paradise"

"Utterly engaging gale of sparkling candor."

—Orrick Johns in the Literary Review, New York Evening Post.

At all bookstores, \$2.00

CHARLES SCRIBNER'S SONS

OUR UNCONSCIOUS MIND

AND HOW TO USE IT
By FREDERICK PIERCE

Research Psychologist

At last an accurate and clear description of the source of a tremendous power that goes to waste in most human beings—with specific methods of getting control of it and setting it to work.

\$3.00 at any bookstore

E. P. Dutton & Co., 681 5th Av., N. Y.

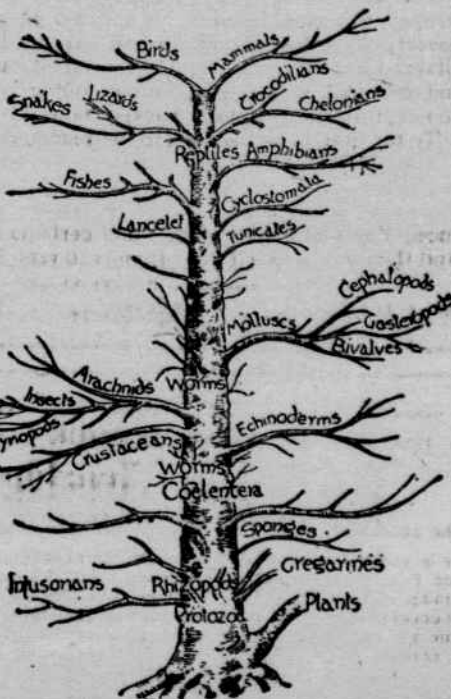
H. L. MENCKEN SAYS:

"If you sicken of psychology and would immerse yourself for a space in very wild doings under distant and chromatic skies, then I commend 'Caravans By Night' to your attention."

CARAVANS BY NIGHT

By Harry Hervey

At all bookstores, price \$1.50



Genealogical Tree of Animals.



MEN OF AFFAIRS

ROLAND PERTWEE'S Thrilling Story of Great Finance

and the struggles of two powerful groups of
Commanding Financiers
for the world's greatest prize.

A gritty youngster, who is stone broke, becomes involved. He agrees to do a certain thing for \$25,000.

Would you do what he did for \$25,000

and chiefly because you said you would, and in spite of the tempting advances of a fascinatingly beautiful woman?

ASK YOUR BOOKSELLER FOR

\$2.00
net

MEN OF AFFAIRS

\$2.00
net

ALFRED A. KNOPF, PUBLISHER, 220 West 42d Street, NEW YORK
In Canada from the Macmillan Co. of Canada, Limited, St. Martin's House, Toronto.